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DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION

333 W. Nye Lane, Room 138
Carson City, Nevada 89706

09 December 2003

NOTICE OF DECISION

**WATER POLLUTION CONTROL PERMIT
NUMBER NEV2003107**

**Hecla Ventures Corporation
Hollister Development Block Project**

The Nevada Division of Environmental Protection has decided to issue Water Pollution Control Permit NEV2003107 to Hecla Ventures Corporation. This permit authorizes the construction, operation, and closure of the approved mining facilities in Elko County. The Division has been provided with sufficient information, in accordance with Nevada Administrative Code (NAC) 445A.350 through NAC 445A.447, to assure the Division that the groundwater quality will not be degraded by this operation, and that public safety and health will be protected.

The permit will become effective 26 December 2003. The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to Nevada Revised Statute (NRS) 445A.605 and NAC 445A.407. All requests for appeals must be filed by 5:00 PM, 22 December 2003, on Form 3, with the State Environmental Commission, 333 West Nye Lane, Capitol Complex, Carson City, Nevada 89706-0851. For more information, contact Miles Shaw at (775) 687-9409, toll free in Nevada at (800) 992-0900, extension 4670, or visit the Division website at www.ndep.nv.gov/bmrr/bmrr01.htm.

One comment letter was received at the close of the comment period on 01 December 2003, from Dr. Tom Myers, Executive Director of Great Basin Mine Watch. Comments quoted from the letter with NDEP responses follow.

NDEP Response to Public Comments

The following are extensive excerpts from a comment letter received 01 December 2003, from Dr. Tom Myers, Executive Director, Great Basin Mine Watch (GBMW). GBMW comment quotes are in *bold italic Times New Roman* print and Bureau of Mining Regulation and Reclamation (BMRR) responses are in Arial print.

GBMW #1: The permit is for an exploration project which is essentially the preliminary stages of mine development. The application is for exploration and the fact sheet discusses it as exploration. However, the draft permit authorizes the permittee to “process off site up to 36,500 tons of ore per year and a maximum of 120,000 tons of ore over the life of the Project”. Other than this one statement, there is no discussion of this processing in the application or fact sheet.

BMRR #1: The BMRR regulations, Nevada Administrative Code (NAC) 445A.350 through NAC 445A.447, do not specifically address exploration projects since the broader objective is prevention of groundwater degradation. Consideration was initially given to permitting the project as a pilot facility or testing facility in accordance with NAC 445A.411 and NAC 445A.412, but the tonnage and time constraints were too limiting for Hecla and the component design criteria were deemed insufficient by BMRR for the proposed project scope. Therefore, the Hollister Development Block Project has been proposed for permitting as a small-scale facility in accordance with NAC 445A.410, a category of facility that provides a time frame and a limit to the total ore (bulk sample) production from the project sufficient to meet Hecla's feasibility study requirements. This category also meets BMRR requirements to protect waters of the State by defining minimum component design criteria in accordance with NAC 445A.433 through NAC 445A.438 and requiring, among other operating plans, a permanent closure plan.

Part II.B.2.d of the draft permit requires annual reporting of the number of tons of waste material placed in the waste rock storage facility, the number of tons of bulk sample material collected, the number of tons of bulk sample material shipped to each off-site processing facility, and the name and location of the off-site processing facility. BMRR will require that any identified off-site processing facility located in Nevada be properly permitted to process the material.

GBMW #2: In fact, Hecla plans on developing 100,000 tons of waste rock for the exploration alone; the fact sheet and the application discuss plans to cap, line and treat

this amount of waste rock. None of the documentation discusses the ramifications of full mine development. An exploration will define the ore body, therefore it is not possible to plan for no more waste rock production. Hecla's application on page 4-1 even states that if the study indicates that mining would be "economically viable, an application for a Mining Water Pollution control Permit will be submitted to NDEP for approval." The draft permit should be rewritten to reflect this as an exploration.

BMRR #2: To reiterate from BMRR #1, the 445A regulations do not recognize an "exploration" category. The small-scale facility permit category severely limits total annual and life of mine ore production while providing significant design criteria requirements. Therefore, as Hecla have stated, an application for a Water Pollution Control Permit (for a higher production rate), in accordance with NAC 445A.394, will be necessary if the project proves to be economically viable. Such an application will require full review of an engineering design and supporting documentation and a public comment period prior to issuing a new Water Pollution Control Permit.

GBMW #3: Permit review, however, should treat the proposal as an exploration to be followed by a likely mine. This proposal calls for the construction of an underground decline and associated drifts and crosscuts for exploration. Samples will be removed and stored in a sample storage facility. The only difference between this exploration and a mine is that ore processing is not included and the ore body has not been delineated. It will become a mine if the samples test to have sufficient quality. Now is the time to establish monitoring and other requirements as though it will be a full-blown underground mine.

BMRR #3: The application for Water Pollution Control Permit NEV2003107 has been thoroughly reviewed as a small-scale facility, i.e., a "Mining" "Facility" as defined in NAC 445A.359 and NAC 445A.364, in accordance with the criteria set forth in NAC 445A.410. The standard of review has not been lowered in any manner by the fact that this is an "exploration" project in support of an economic feasibility study. Furthermore, as even GBMW has stated, "the ore body has not been delineated". Therefore, the monitoring and other permit requirements that have been established in the draft permit are based on the information submitted with the application and are considered appropriate for the scope and magnitude of the project. It is anticipated that the "exploration" program will provide additional useful information. Additionally, BMRR can require changes be made to a permit in the future if conditions warrant.

GBMW #4: This permit "does not authorize discharge of fluids or processing on site". However, although the application indicates that rapid infiltration basins (RIBs) would be used to recharge dewatering water, RIBs are not included in this application. You have indicated to me that Hecla applied separately for the RIBs. These projects should not be separated for at least two reasons. One, Hecla could commence construction of

the decline prior to receiving a permit for the RIBs; if Hecla reaches groundwater prior to permitting the RIBs, there will be problems disposing of the waste water. As discussed below, the water quality for the water being discharged could be very poor quality. Second, it is inefficient institutionally for NDEP to process two separate applications for one exploration project.

BMRR #4: BMRR and Bureau of Water Pollution Control (BWPC) routinely process infiltration and water management facility permits separately from related mining facility permits due to the inherent differences in reviewing, permitting, regulating, and monitoring non-process component issues versus process component issues. In this instance, Water Pollution Control Permit NEV2003107 Schedule of Compliance (SOC) item I.B.2 authorizes no discharge of fluids and Hecla must cease any discharge from the underground workings if the water balance cannot be maintained within the approved design criteria for the permitted Facility containment components. Hydrogeologic studies indicate water will not discharge from the decline portal without pumping assistance and analytical data collected for the same studies indicate discharge water should meet the Division Profile I water quality standards except for two (2) boreholes with slightly elevated background values for manganese and one (1) borehole that reported a slightly elevated value for iron.

GBMW #5: In addition to the RIBS, there are three separate potential sources of groundwater degradation at this site. They are groundwater inflows to the decline, leakage from the surge and desilting ponds, and the waste rock dump. The proposed permit considers monitoring groundwater only beneath the waste rock.

BMRR #5: The available data, component engineering designs, and permit monitoring requirements do not support this comment. As stated above, water from the decline is expected to be of good quality. In accordance with Part I.D.2 of the draft permit, average daily flow rates and Division Profile II water quality analyses will be reported quarterly for the decline discharge water. The three (3) de-silting basins and the two (2) surge/recycle ponds are lined with 60-mil HDPE. The draft permit, Part I.D.3, requires that average flow rate and pH be measured weekly and reported quarterly along with Division Profile II analyses for outflow from the final pond that discharges to the Utility Tank. Finally, the waste rock storage facility is of an engineered design with a one-foot thick, low permeability, compacted clay base, sloped to a system of perforated solution collection pipes that discharge to a 100-mil-thick HDPE-lined Solution Evaporation Sump. In accordance with Part I.D.4 of the draft permit, if fluid is present in the sump, fluid volume and pH are to be measured weekly and reported quarterly along with a Division Profile II analysis of the noted fluid. The draft permit also details procedures for disposal of any collected fluid based on water quality analysis. Based on the component design and identified issues, the draft permit monitoring requirements should adequately prevent groundwater degradation.

GBMW #6: Dewatering will occur if grouting is unsuccessful in reducing the flows to rates that can be used on site. The Waste Rock Characterization Report indicates that most of the waste rock, and presumably the ore, will be acid generating. The decline will allow air to reach rock currently submerged by groundwater. The water draining to the decline may have substantially poorer water quality than is currently found in the groundwater due to this potential oxidation. Boreholes BH-01, -02 and -04 were completed as piezometers to monitor groundwater levels. (Fact Sheet, page 7). Because of the potential oxidation near the decline, these boreholes should be monitoring wells. This is particularly essential when the water levels recover and the decline is filled with water (if the ore body does not yield a future mine). These monitoring wells would also provide excellent baseline water quality values for future mining.

BMRR #6: Discharge from the decline will be routinely characterized in accordance with Part I.D.2 of the draft permit. This sampling will provide baseline data in addition to proposed monitoring well data. The boreholes mentioned are too small in diameter to be used as monitoring wells and, since they are in the path of the proposed decline and will be damaged, they will be properly abandoned prior to project start-up.

GBMW #7: Dewatering water will also be delivered to the surge pond and desilting basins. The water in these ponds could be quite poor for reasons specified in the preceding paragraph. For this reason, water in the ponds should be sampled at least quarterly (or when water exists in the ponds). If the water is of poor quality, the operator should install at least one vadose zone and one regular monitoring well to assure that leakage does reach the groundwater. Alternatively, there could be adequate leak detection provided as would be required under a process solution pond.

BMRR #7: The decline discharge will be sampled quarterly in accordance with the draft permit. It is anticipated the water will be of good quality. The draft permit does not authorize processing on the site. Dewatering water is not considered process fluid if it has not been in contact with a process component.

GBMW #8: Table 2-1 in the permit application shows summary groundwater quality data that, excepting manganese, meets water quality standards. The map labeled project layout in the Waste Rock Characterization Report shows the location of the boreholes used for this characterization. None of the holes appear to be under the pit or near where the site facilities will be located; most are located along the proposed decline. Thus, it cannot be claimed that this water represents background for the site. It cannot also not be claimed that this water quality will be that of the water that seeps into the decline for the reasons discussed above. It is essential that background water quality under the pit in which the site facilities will be built be determined. Because the site has been previously mined, it will be essential to determine background as that

which existed prior to the previous mining at Hollister. *To do this, NDEP should examine the water quality reported for Hollister to establish a fair background for Hecla.*

BMRR #8: Water samples from the decline are considered indicative of background water quality for the site since the decline is part of the facility, discharge from the decline and associated underground workings represents the majority of water to be managed, the decline boreholes are within 500 feet of the pit, and the same aquifer that could be affected was sampled by those boreholes. Existing water quality monitoring wells, such as WW-1, which are peripheral to the site but within the groundwater flow gradient, demonstrate water quality similar to the decline boreholes. Monitoring well DGW-1 will be constructed, within 60 days of initiation of facility construction in accordance with SOC item I.B.3, which has been added to the draft permit. This well will be constructed in the downgradient groundwater flow direction adjacent to the pit to provide additional background data and a new monitoring point. Except for minor exceedances in manganese and iron, the identified water quality meets the Division Profile I standards and the permit will require continued compliance. The existing data and proposed monitoring are considered quite adequate for the project scope and footprint.

GBMW #9: This project presents an interesting policy question concerning background water quality. Most federal laws assume that a company that buys a site inherits the liability to clean up existing problems. The selling party also maintains liability. In this case, Newmont is liable for any needed clean-up; once Hecla begins to explore and potentially mine the site, it becomes liable. Great Basin also probably retains liability. The question is: what is Nevada's position on joint and several liability concerning groundwater quality at sites that have been mined by several companies?

BMRR #9: In the event a site requires remedial action, the property owner, or owners, are considered the responsible parties for the clean up.

GBMW #10: Because the Waste Rock Characterization shows potentially very acidic water resulting from seepage through the rock, substantial steps should be taken to protect groundwater. The proposal indicates approximately 100,000 tons of waste rock will be generated and permanently stored in a dump in the existing East Pit. Unfortunately, the permit application and the fact sheet differ in their details. The fact sheet indicates that a low permeability soil base will be constructed under the waste rock; the Water Pollution Control Permit Application indicates that a limestone base with a minimum thickness of 1 foot will be used. Because the permit specifies that construction follow as discussed in the application, it is important to clear up these errors.

Hecla's proposal to place 1 foot of limestone will not protect groundwater. A limestone pad will work only if the flow through the pad is uniform because it is essential to maximize the surface area contact. Preferential flow paths through the limestone will quickly form and much of the neutralization potential will be lost. The one foot low permeability base will also be relatively useless. The specification for permeability to be 1×10^{-5} cm/s is insufficient. This is equivalent to 0.008 m/d or 3.15 m/year. Because water, if it is flowing through the waste rock, would pond on the liner, the gradient would be essentially 1 which means that leakage through a perfectly constructed liner would take only about 10 days.

BMRR #10: Although minimum waste rock facility design criteria are not provided in regulation, Hecla provided a supplemental engineered waste rock storage facility design at the request of BMRR. The design incorporates a sloped and compacted low permeability soil base (LPSB), overlain by a solution collection system comprised of a low hydraulic head layer and perforated collection pipes that report to a 100-mil-thick HDPE-lined collection sump. The design also calls for the placement of an engineered low permeability barrier layer (LPBL), comprised of either layered clay material or shingled HDPE as dictated by equipment and access limitations, where the waste rock storage facility material abuts the existing pit wall. The LPBL is also tied to the collection sump. This design is in addition to the acid generation mitigation procedures detailed by Hecla and based on extensive waste and ore characterization studies.

With regard to base layer permeability concerns, GBMW must be assuming saturated conditions above a horizontal, ponding surface in its analysis. Such is not the case. Potential solution emanating from the waste material will be the net of what it contains at the time of removal from the workings plus meteoric event contributions, less field capacity and evapotranspiration. The management plan also includes snow removal as practical. Any solution that does migrate downward through the waste rock will encounter the low hydraulic head collection system and be evacuated to the lined collection pond. BMRR believes this design, in concert with the proposed mitigation activities, will be effective in preventing degradation of groundwater.

GBMW #11: The waste rock will not be monitored adequately either. Because of the high acid generation potential, NDEP should require vadose monitoring of the soil directly beneath the waste rock dump. It is not acceptable to wait until the lone monitoring well (more on this later) intercepts the potential pollution. By then, only substantial pumpback would remediate the situation.

BMRR #11: The pit floor is actually broken and blasted rock fill. There is no soil horizon in which a vadose well could function. The proposed new monitoring well, the waste rock storage facility design, and the permit monitoring

requirements for the waste rock storage facility are viewed as substantial, given that this is an “exploration” project.

GBMW #12: Apparently, a new well named DGW-1 will be drilled south-southeast of the waste rock dump. Fact Sheet, page 7. Neither the fact sheet nor the application specify the exact location, therefore it is not possible to determine how far from the potential leakage source the monitoring well will be. There is no discussion about the flow direction, thus it is not even possible to assess whether south-southeast is down-gradient from the waste rock dump. Additionally, one well is insufficient when the waste rock potentially generates substantial pollution. The application indicates that fractures control the flow. It is therefore essential that a well be properly developed in each fracture zone to adequately monitor groundwater quality.

The fact sheet also indicates that groundwater lies at about 5425 feet amsl and that the well will be completed to a depth of 5350 and 5300 amsl. Assuming the well screening extends from the phreatic surface to the bottom of the well, from 75 to 125 feet of well will be screened. This well will not detect degradation if it occurs because of the effect of dilution. Initially, and for many years, leakage will reach the phreatic surface and only slowly diffuse and convect downward into the wider groundwater column. Flow into the monitoring well will primarily be from the entire column and will dilute any pollution reaching the aquifer.

BMRR #12: As discussed in BMRR #8, water quality monitoring well DGW-1 is not yet constructed. The proposed location is at local project coordinates 35150N, 37100E. The location plots approximately 600 feet southeast of the edge of the waste rock storage facility (WRSF) and 650 feet south of the decline portal. The pit wall against which the WRSF abuts prohibits placement of the well closer to the facility.

The south-southeast groundwater flow direction was established during hydrogeologic investigations completed by Hecla, for the permit application in 2002, and by Newmont, for their closure permit in 1997. The flow is confined to the Tertiary tuffs, above a clay-rich unconformity that prohibits hydraulic communication to the underlying Ordovician Valmy Formation.

The depth to completion for DWG-1 is based on projections of depth to groundwater beneath the proposed collar location and is, therefore, only approximate. The well will be completed in accordance with State well drilling requirements and will be screened in the upper portion of the saturated zone, not over the entire zone penetrated by the hole.

Although Newmont water quality monitoring has not identified any problems with water quality beneath the West Pit (USX Pit), that pit did experience acid generation following cessation of mining operations by Ivanhoe and prior to

mitigation by Newmont. Therefore, Hecla has proposed installing a monitoring well between the West Pit and the East Pit, where its facilities will be located, to monitor West Pit water quality prior to potential migration to the East Pit.

GBMW #13: Great Basin Mine Watch recommends that all aquifers be monitored vertically with multiple completion wells. In this case, two screenings, over the top two ten foot aquifer layers, would probably be sufficient. On larger mine sites with multiple pollutant source the recommendation would be for more screens.

Thus, to adequately monitor whether pollution leaves the dump and/or reaches the aquifer, Hecla should install vadose monitoring at the dump and more than one deep monitoring well with two completions just down-gradient from the dump. The spacing of these wells depends on the width of the dump and the fracture density. Only with this type of monitoring can it be assured that aquifers are not being degraded by this proposal.

BMRR #13: The recommendation is noted. However, as discussed in BMRR # 11, vadose wells are not a practical option. In addition, given that the maximum permitted waste rock storage facility footprint is less than 2 acres, the draft permit monitoring requirements are considered appropriate.